# EFFECT OF PARAMETER CONDITIONS ON OXIDATIVE DEGRADATION OF DYES USING PEROVSKITE CATALYST: A REVIEW

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# AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the results of my own, unless otherwise indicated or acknowledge as reference work.

I, hereby acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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# SUPERVISOR'S CERTIFICATION

I declared that I read this thesis and in my point of view this thesis is qualified in terms of scope and quality for the purpose of awarding the Bachelor of Chemical Engineering (Environment) with Honours.

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# ABSTRACT

A review was conducted regarding the effect of parameter conditions on oxidative degradation of dyes using perovskite catalyst. Four parameters were studied which are effect of dye initial concentration, pH of solution, the amount of catalyst dosage and the temperature of the solution. This study also covers the literature review regarding the dye effluent, organic pollutant, Advanced Oxidation Process (AOP), perovskite catalyst and effect of the four stated parameter condition using perovskite catalyst. Research methodology were also studied to identify suitable methods to conduct the review, within the allowable actions permitted by the respective authorities given to the current situation in the country. The process flow of the procedure was listed and elaborated. Flow chart for the methodology were prepared. The data obtained on the four parameters which affecting the oxidative degradation of dyes using perovskite catalyst was lined up and elaborated in a short but informative manner. The data obtained from various type of research paper. However, the amount of data obtained was only the one related to the perovskite catalyst influence in dye degradation only. This review concluded that in the initial dye concentration section, the higher concentration would lead to a lower efficiency of the dye degradation. High concentration of dyes would lead to the inability of the perovskite catalyst to process it efficiently. Results of the reviewed paper also shows that excessive amount of initial dye concentration leads to the inability of the degradation process to degrade the dyes at all. The presence of the catalyst highly influences the efficiency of the degradation process when compared to the one where the catalyst is absent. Next, the result obtained from reviewed paper also shows that the most suitable pH solution for degradation of dye process is in alkaline solution, between the range of 1-3 specifically. Most of the high efficiency and high degradation rate occurs in the range below pH value of 4. The study shows that alkaline solution would result in the lower performance of perovskite catalyst and the degradation efficiency. The higher the amount of catalyst dosage would lead to an increased efficiency of the degradation of dye. The higher the amount of the catalyst dosage would lead to increased rate and ability to degrade the dye solution. Finally, this review also found that a higher temperature is more preferable for the process of dye degradation. A temperature ranges from 40-60 ºC is the most suitable temperature for degradation process to perform at the maximum limit.